

[54] **OIL WELL DERRICK WITH GUIDE TRACK FOR TRAVELLING BLOCK DOLLY**

[75] Inventors: **Homer J. Woolslayer; Cecil Jenkins**, both of Tulsa, Okla.

[73] Assignee: **Lee C. Moore Corporation**, Tulsa, Okla.

[22] Filed: **Apr. 15, 1971**

[21] Appl. No.: **134,127**

[52] U.S. Cl. **254/139, 52/648**

[51] Int. Cl. **B66c 23/60**

[58] Field of Search..... 254/139, 139.1, 190; 187/95; 52/648, 652

[56] **References Cited**
UNITED STATES PATENTS

3,281,122	10/1966	Jenkins	254/190
3,336,003	8/1967	Crooke	254/139
3,367,448	2/1968	Wille.....	212/46
3,376,938	4/1968	Scott.....	254/139.1

3,483,933 12/1969 Dyer 52/116
3,498,586 3/1970 Turner..... 254/139

Primary Examiner—Evon C. Blunk

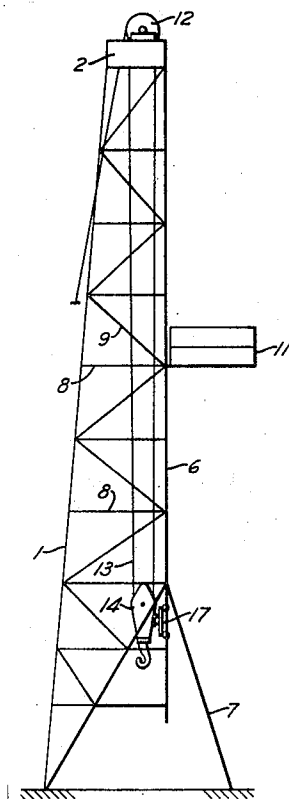
Assistant Examiner—James L. Rowland

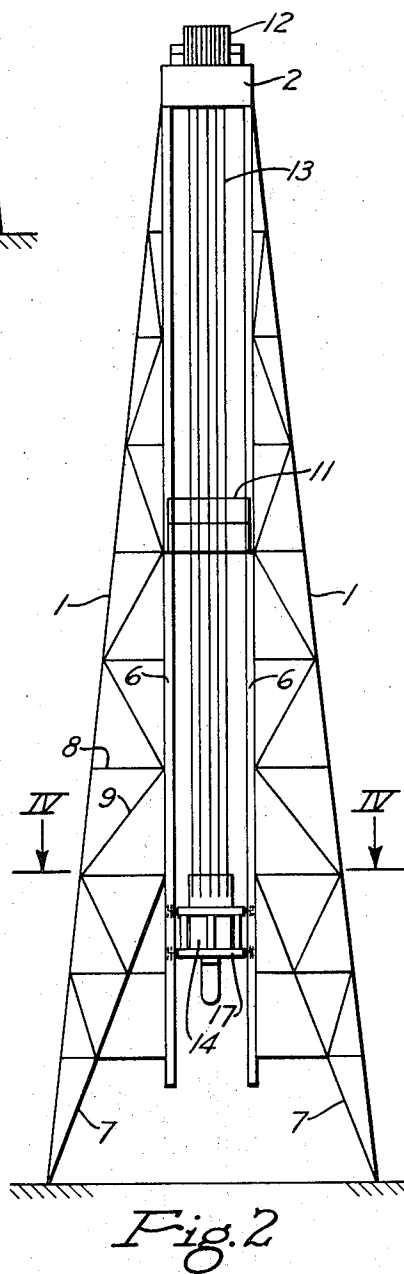
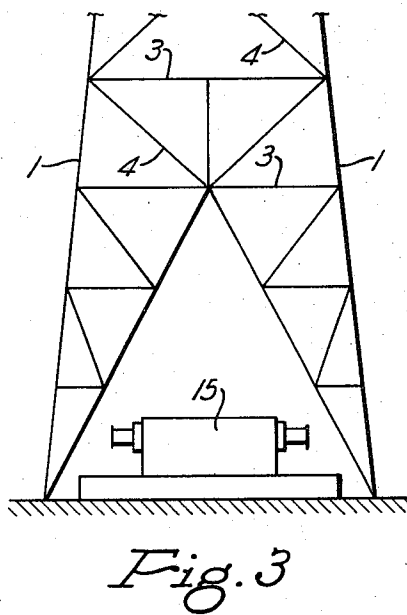
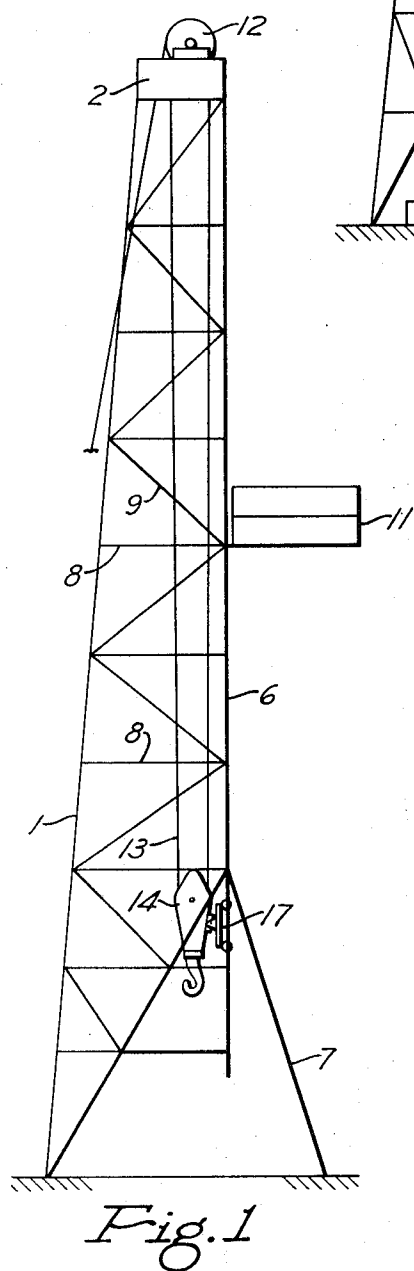
Attorney, Agent, or Firm—Brown, Murray, Flick & Peckham

[57] **ABSTRACT**

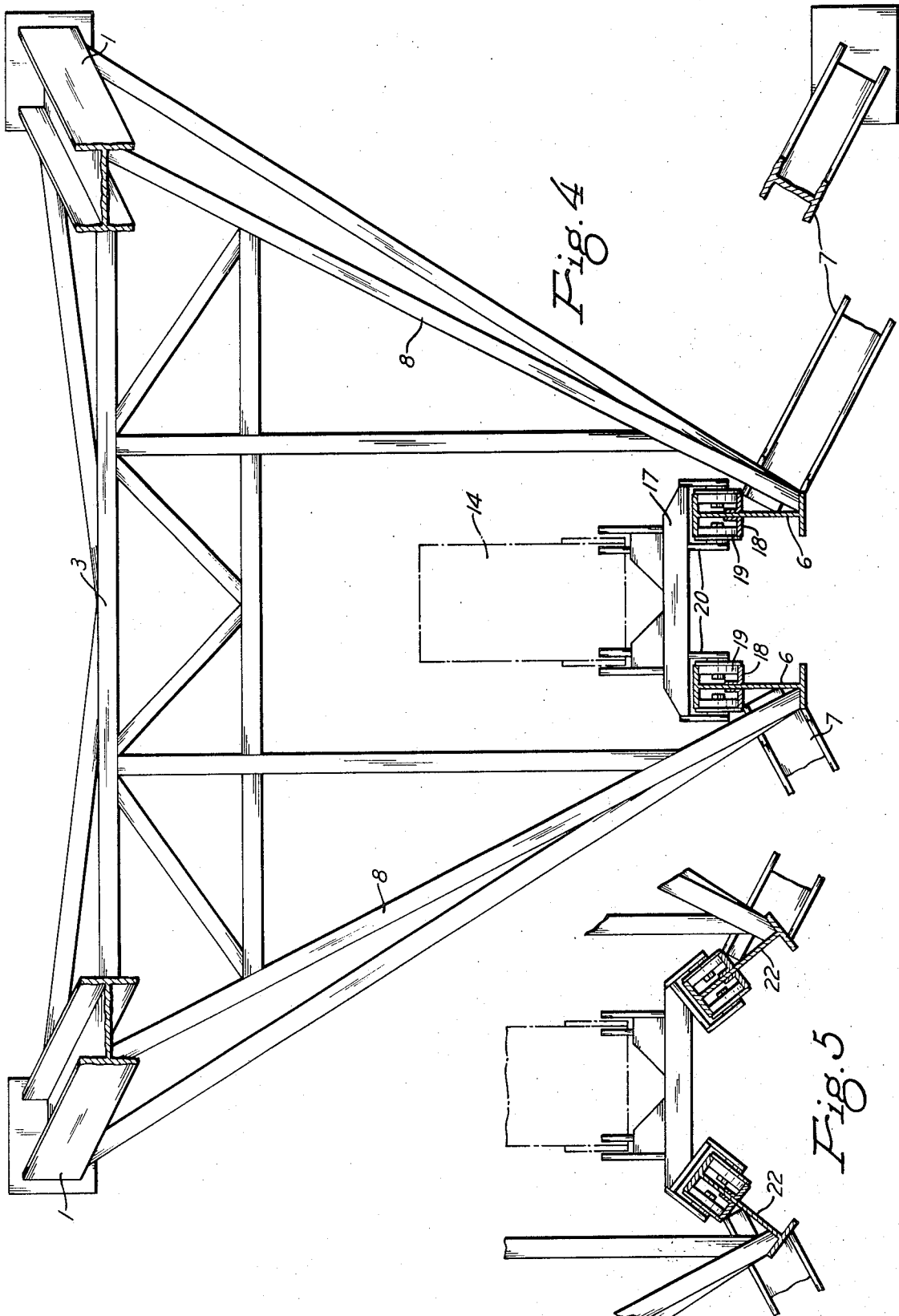
An oil well derrick has two front legs and two downwardly diverging back legs. Cross braces rigidly connect the back legs and also rigidly connect the back legs to the front legs. The front legs extend downwardly from the top of the derrick in parallel relation for at least the major portion of the distance from top to bottom of the derrick and form the rails of a guide track. Mounted on this track is a travelling block dolly that is movable up and down the track. The front of the derrick between the track rails is open to allow stands of pipe to be moved through the track into and out of the derrick.

8 Claims, 5 Drawing Figures





INVENTORS.
HOMER J. WOOLSLAYER
CECIL JENKINS
BY *Brown, Murray, Flick & Peckham*
ATTORNEYS.



OIL WELL DERRICK WITH GUIDE TRACK FOR TRAVELLING BLOCK DOLLY

In drilling deep oil wells it sometimes is desirable to provide the inside of the derrick with a track on which a dolly can move up and down in the derrick. The dolly is connected to the travelling block in order to restrain the block from swinging due to wind loads or, when drilling afloat, due to the effects of ship roll. Also, when a powered swivel is used, such a track and dolly are needed to resist the reaction to the torque on the drill pipe. In the past, such guide tracks have been mounted either at the center of a derrick or against one of its sides. In other words, a four-leg derrick was provided inside with rails forming a track for the travelling block, independent of the derrick legs.

It is among the objects of this invention to provide a derrick, in which the front legs and the track for the travelling block are one and the same, and in which the front of the derrick between the track rails is open to allow stands of pipe to be moved through the track into and out of the derrick.

The preferred embodiment of the invention is illustrated in the accompanying drawings, in which

FIG. 1 is a side view of the derrick;

FIG. 2 is a front view;

FIG. 3 is a fragmentary rear view;

FIG. 4 is an enlarged horizontal section taken on the line IV—IV of FIG. 2; and

FIG. 5 is a fragmentary horizontal section of a modification.

Referring to FIGS. 1 to 4 of the drawings, a structural steel derrick, which may be assembled piece-by-piece from the ground up or may be pre-fabricated and swung up to erect position from a reclining position on the ground, has two back legs 1 that diverge downwardly from the rectangular top or crown 2 of the derrick. Preferably, these legs are straight and inclined from top to bottom. Their widely spaced lower ends give stability to the derrick. These legs are rigidly connected by cross braces in the form of girts 3 and diagonal bracing members 4, as shown in FIG. 3.

The front legs 6 of the derrick are shown disposed in a vertical plane and extend downwardly from the top of the derrick in parallel relation as illustrated in FIG. 2. Although these legs may extend straight down to the base of the derrick, for clearance on the working floor it is preferred that their lower ends terminate some distance above the base. The lower portion of the legs then are formed from downwardly diverging leg members 7 secured to the parallel portions of the legs and sloped forward to increase the distance between the front and back feet of the derrick. The front legs therefore extend downwardly from the top of the derrick in parallel relation for the major portion of the distance from top to bottom of the derrick and then slope out away from the body of the derrick as shown in FIGS. 1 and 2 to give the derrick stability and a large working area. The portions of the parallel legs 6 below the points at which the leg members 7 are attached do not serve as legs, but as extensions of the vertical members. The parallel legs are rigidly connected to the back legs 1 by cross members formed of girts 8 and diagonal braces 9. As shown in FIG. 2, there are no cross members connecting the front legs, except possibly near their upper ends, but the usual racking platform 11 projects forward from the front legs for receiving stands of pipe moved out of the derrick through the

open front side. A crown block 12 mounted on top of the derrick supports the usual lines 13 that suspend a travelling block 14 inside the derrick and connect it with drawworks 15 (FIG. 3) behind the derrick.

Since the upper ends of the back legs are spaced apart substantially the same distance as the upper ends of the front legs, and since the back legs diverge downwardly, the front of the derrick is considerably narrower for most of its height than the back of the derrick, as indicated in FIG. 4. Although the opposite sides of the derrick converge forward, the diverging lower portions 7 of the front legs give the derrick stability.

It is a feature of this invention that the travelling block is prevented from twisting in the derrick, or swinging and swaying due to the wind or to the rolling of a barge on which the derrick may be mounted. Accordingly, the travelling block is attached to a dolly 17 that runs up and down a guide track inside the derrick. Unlike presently known tracks for this purpose, this derrick does not contain a separate track spaced from the derrick legs, but utilizes the parallel portions 6 of the front legs themselves as the rails of the track. As shown in FIG. 4, these rails may be formed from I-beams provided with an extra intermediate pair of flanges 18. The dolly is provided with four pairs of wheels 19 which are disposed between these extra flanges and the innermost flanges of the beams. The wheels are mounted in brackets 20 secured to the frame of the dolly.

The webs of the rails 6 shown in FIG. 4 are parallel to each other, which is the preferred arrangement when the derrick is to be used on land with a powered swivel. However, if the derrick is to be used for off-shore drilling from a ship or barge, the rails 22 are positioned with their webs in vertical planes converging toward the center of the derrick, as shown in FIG. 5, to better restrain the travelling block from motion due to ship roll. In either case the dolly may take the form of the one shown in U.S. Pat. No. 3,281,122 if desired.

It will be seen that economies are effected by combining the front legs of the derrick and the dolly guide track so that the legs serve two purposes.

According to the provisions of the patent statutes, we have explained the principle of our invention and have illustrated and described what we now consider to represent its best embodiment. However, we desire to have it understood that, within the scope of the appended claims, the invention may be practiced otherwise than as specifically illustrated and described.

We claim:

1. An oil well derrick having a front and a back, comprising two front legs and two downwardly diverging back legs, rear cross braces rigidly connecting the back legs, side cross braces rigidly connecting the front legs to the back legs, the front legs extending downwardly from the top of the derrick in parallel relation in a substantially vertical plane for the major portion of the distance from top to bottom of the derrick to form the rails of a guide track, the lower portions of the front legs diverging downwardly, and a travelling block dolly in the derrick mounted on said track for movement only lengthwise thereof, the front of the derrick between the track rails being open to allow stands of pipe to be moved through the track into and out of the derrick.

2. An oil well derrick according to claim 1, in which the track rails have extensions extending downwardly

3

in parallel relation below the upper ends of said diverging lower portions of the front legs to form a lower extension of said track.

3. An oil well derrick according to claim 1, in which the upper ends of the front legs are substantially the same distance apart as the upper ends of the back legs, and the back legs diverge from top to bottom, whereby the top of the derrick is substantially rectangular and the sides of the derrick below the top converge forward to said track rails.

4. An oil well derrick according to claim 1, in which said parallel front legs are I-beams having webs disposed in planes converging toward the center of the derrick, and said dolly includes wheels disposed between the flanges of each beam to hold the dolly on the track.

5. An oil well derrick according to claim 1, in which said parallel front legs are I-beams having vertical webs and front and rear flanges, the front ends of said side cross braces are connected to front flanges of said beams, said rear flanges are spaced inwardly from said side cross braces, and said beams are provided with intermediate vertical flanges spaced behind their front flanges and joined to their webs, said dolly including wheels on opposite sides of each beam web and dis-

4

posed between the rear flanges of the beams and said intermediate flanges to hold the dolly on the track.

6. An oil well derrick according to claim 5, in which the webs of said I-beams are disposed in planes converging toward the center of the derrick.

7. An oil well derrick according to claim 1, in which the upper ends of the front legs are substantially the same distance apart as the upper ends of the back legs, the back legs diverge from top to bottom, whereby the top of the derrick is substantially rectangular and the sides of the derrick below the top converge forward to said track rails, and the track rails have extensions extending downwardly in parallel relation below the upper ends of said diverging lower portions of the front legs to form a lower extension of said track.

8. An oil well derrick according to claim 1, in which the upper ends of the front legs are substantially the same distance apart as the upper ends of the back legs, the back legs diverge from top to bottom and slope rearwardly, the sides of the derrick below its top converge forward to said track rails, and said diverging lower portions of the front legs slope forward from their upper ends.

* * * * *

30

35

40

45

50

55

60

65